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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/669,043	09/23/2003	Arcady Reiderman	EMS-03-02	3993

34010 7590 01/29/2007
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EXAMINER

CHENG, JACQUELINE

ART UNIT	PAPER NUMBER
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3768

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/29/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/669,043

Applicant(s)

REIDERMAN ET AL.

Examiner

Jacqueline Cheng

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11, 13-16, 18-20, 22-29 and 31-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11, 13-16, 18-20, 22-29, 31-3 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Applicant's arguments filed August 24, 2006 have been fully considered but they are not persuasive. The applicant states that Van Yperen (US Patent No. 5,402,787) does not teach quantitatively determining amounts of one or more constituent substances. The examiner respectfully disagrees with the applicant. Van Yperen teaches that a well chosen sequence of RF-pulses (like the CPMG sequence) causes the radiation to be emitted as NMR-signals which provide information about the density of a certain type of nuclei and the substance in which they occur. Density is a quantitative amount of a constituent substance such as hydrogen so therefore the examiner maintains the rejection from June 15, 2006 restated below.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-11, 13-15, 20, 22, 24, 27-29, 31-37 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 5,402,787 (herein referred to as Van Ypren).

4. **Claims 1, 2, 6-11, 13-15, 20, 22, 24, 27-29, 31-37:** Van Ypren discloses a method for magnetic resonance imaging of a body. The body is placed in a stationary, homogeneous magnetic field, while a slice select gradient magnetic field, a magnetic field gradient applied to

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select a slice position in an gradient (x) direction, and a radio frequency field, for applying RF pulses, are induced for excitation of nuclear dipole moments in the body at the area of interest. The selected slice (axial segment) that is being imaged is placed within the system's imaging volume, which is the area where the static magnetic field is homogenous in all directions (including perpendicular to the longitudinal axis of the body). (col. 1, col. 2 line 58-col. 3 line 23). These images are taken with the same resolution so as to maintain spatial uniformity so that they can be combined to form the full image. A well-chosen sequence, controlled by a control means, of RF-pulses and gradient field pulses, such as a Carr-Purcell-Meiboom-Gill sequence (col. 1 line 20-22); causes the radiation to be emitted as NMR-signals which provide information about the density of a certain type of nuclei. By analysis of the emitted signals and presentation of it in the form of images, information about the internal structure of the body (such as size, position and composition) is accessible (col. 4 line 29-36).

5. **Claims 3-5:** It is inherent in an MR system that the MR signal amplitudes are proportional to the density of a particular composition (for example spin density based MR imaging), because so, the size and position of a composition can be determined. It is also inherent that each of the components of the body has different T1 and T2 times and so therefore the composition of the body can be determined by the relaxation times (col. 1 line 56-63).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claims 16 and 23** are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Ypren as applied to claim 9 above, and further in view of US Patent No. 5,517,118 (herein referred to as Crowley et al.). Crowley et al. discloses an MRI device to construct an image of a slice that involves combining NMR images of subslices to the total slice of tissue to be imaged (abstract). These subslices are non-adjacent subslices (col. 9 line 22-27). It would be obvious to one with ordinary skill in the art at the time of the invention to combine Crowley et al. with Van Ypren as both inventions are for slice select MRI imaging and to further the utility of Van Ypren as combining the subslices would provide a better image.

8. **Claims 18 and 25** are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Ypren as applied to claims 9 and 20 above, and further in view of US Patent No. 4,784,146 (herein referred to as Mancuso et al.). Mancuso et al. discloses calculating signal to noise ratio with respect to a volume of the axial segment (col. 1 line 65-67). It would be obvious to one with ordinary skill in the art at the time of the invention to combine Mancuso et al. and Van Ypren as both inventions related to MRI imaging and to further the utility of Van Ypren to have a well tuned receiver coil which is a important performance criterion.

9. **Claims 19 and 26** are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Ypren as applied to claims 9 and 20 above, and further in view of US Publication No. 2003/0069497 A1 (herein referred to as Ochi et al.). Ochi et al. discloses having gradient magnetic fields having a larger strength than gradients in the static magnetic field (paragraph

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0022). It would be obvious to one with ordinary skill in the art at the time of the invention to combine Ochi et al. with Van Ypren as both inventions are related to MRI imaging and to further the utility of Van Ypren to have positional information in all three directions.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure is US Patent No. 4,720,679.

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacqueline Cheng whose telephone number is 571-272-5596. The examiner can normally be reached on M-F 9:00-5:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eleni Mantis-Mercader can be reached on 571-272-4740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JC


ELENI MANTIS MERCADER
SUPERVISORY PATENT EXAMINER